

#### REMARKS

Claims 1, 3-26, 37-42, and 45-47 are currently pending. Claims 1, 5, 6, 9, 10, 12, 13, and 22 have been amended. New Claims 48 and 49 have been added. Support for the amendments and new claims is found in the specification and claims as filed.

#### Claim Objection

Claim 1 has been objected to because of informalities. Claim 1 has been amended to replace “a second opposite conductivity type” with –a second conductivity type–. In view of the foregoing amendment, Applicants respectfully request withdrawal of the objection.

#### Claim Rejection - 35 U.S.C. § 102(b) - Fathauer et al.

Claims 1, 3-22, 24, 38, 40-42, and 45-46 have been rejected under 35 U.S.C. §102(b) as anticipated by U.S. 6,683,367 (Fathauer et al.). “A rejection for anticipation under section 102 requires that each and every limitation of the claimed invention be disclosed in a single prior art reference.” *See, e.g., In re Paulsen*, 31 U.S.P.Q.2d 1671 (Fed. Cir. 1994). Fathauer et al. does not disclose every element of Applicants’ claims, and therefore cannot be considered as an anticipating reference under 35 U.S.C. § 102(b).

Pending independent Claim 1 recites a photovoltaic device comprising, *inter alia*, “a third layer consisting of a single elemental semiconductor material, wherein the third layer is situated between the first layer and the second layer, and wherein the third layer is a translucent porous layer and diffusion barrier having a thickness of from about 1 nm to about 50 nm.” Fathauer et al. teaches a porous Si-Ge layer. Fathauer et al. does not teach a porous layer consisting of a single elemental semiconductor material. To the contrary, Fathauer teaches away from such a layer: “The stain etching is conducted under conditions operable for forming a high density of small pores in the Si-Ge layers with no more than a minor amount of porosification of the Si layers. By minor amount of porosification of the Si layers as used herein is meant a non-deleterious amount of porosification which allows for some pores at the perimeter or interface with the S-Ge layers or surface of the Si layers, but no overall porosity through the Si layers.” (col. 3, lines 9-17). Accordingly, only a silicon layer with some pores at the surface (minor amount of porosification) is disclosed, not a porous silicon layer. Thus, Fathauer et al. does not

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disclose a layer consisting of a single elemental semiconductor material that is also porous, and therefore cannot anticipate Claims 1, 3-22, 24, 38, 40-42, and 45-46.

Accordingly, Applicants respectfully request that the rejection be withdrawn.

Claim Rejection - 35 U.S.C. §103(a) - Fathauer et al. in view of Yamada et al.

Claim 23 has been rejected under 35 U.S.C. §103(a) as obvious over Fathauer et al. in view of U.S. 5,331,180 (“Yamada et al.”). To establish a *prima facie* case of obviousness, three basic criteria must be met: first, the prior art reference (or references when combined) must teach or suggest all the claim limitations; second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; finally, there must be a reasonable expectation of success. *See* M.P.E.P. § 2143.

Yamada et al. teaches a porous silicon layer. As discussed above, Fathauer et al. only teaches a porous Si-Ge layer. Not only does Fathauer et al. fail to teach or suggest a porous layer consisting of a single elemental semiconductor material, Fathauer et al. teaches away from such a layer, namely, away from a porous layer consisting only of silicon. It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983).

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). There is no such suggestion of the desirability of the combination. To the contrary, the combination is undesirable in that Fathauer et al. utilizes the differential in etching rate between Si-Ge and Si to produce a porous Si-Ge layer without detrimental etching of the underlying silicon layer. The Fathauer et al. method will not work in forming a porous silicon layer, thus there is no reasonable expectation of success in the combination of Fathauer et al. and Yamada et al.

Accordingly, Applicants respectfully request that the rejection of the claim be withdrawn.

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*Claim Rejection - 35 U.S.C. §103(a) - Fathauer et al. in view of Berger et al.*

Claims 25, 37, 39, and 47 have been rejected under 35 U.S.C. §103(a) as obvious over Fathauer et al. in view of Berger et al. J. Phys., 1994, pp. 1333-1336 ("Berger et al.") and further in view of Yamada et al.

Like Yamada et al., Berger et al. teaches a porous silicon layer. Accordingly, Berger et al. includes no teaching overcoming the deficiencies of the proposed combination of Fathauer et al. and Yamada et al. Accordingly, Applicants respectfully request that the rejection of the claims be withdrawn.

*Claim Rejection - 35 U.S.C. §103(a) - Fathauer et al. in view of Berger et al. in view of Yamada et al.*

Claims 25, 37, 39, and 47 have been rejected under 35 U.S.C. §103(a) as obvious over Fathauer et al. in view of Berger et al. J. Phys., 1994, pp. 1333-1336 ("Berger et al.") and further in view of Yamada et al.

Like Yamada et al., Berger et al. teaches a porous silicon layer. Accordingly, Berger et al. includes no teaching overcoming the deficiencies of the proposed combination of Fathauer et al. and Yamada et al. Accordingly, Applicants respectfully request that the rejection of the claims be withdrawn.

*Claim Rejection - 35 U.S.C. §103(a) - Fathauer et al. in view of Suzuki et al.*

Claim 26 has been rejected under 35 U.S.C. §103(a) as obvious over Fathauer et al. in view of U.S. 5,644,156 ("Suzuki et al.").

Like Yamada et al. and Berger et al., Suzuki et al. teaches a porous silicon layer. Accordingly, Suzuki et al. includes no teaching overcoming the deficiencies of the proposed combination of Fathauer et al. and Yamada et al. Accordingly, Applicants respectfully request that the rejection of the claims be withdrawn.

*Conclusion*

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining

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concerns that might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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